CLAIMS

1. A mold for injection molding comprising:
a mold cavity having an inside shape fit to an outside shape of a target product; and
a temporary space being communicated with the mold cavity and is eliminated before an amount of a molten material being injected to the mold cavity reaches the capacity of the mold cavity.

2. A mold for injection molding comprising:
a mold cavity having an inside shape fit to an outside shape of a target product;
a junk cavity being communicated with the mold cavity; and
a temporary space being communicated with the mold cavity and is eliminated before an amount of a molten material being injected to the mold cavity reaches the total capacity of the mold cavity and the junk cavity.

3. A mold for injection molding according to claim 1 or 2,
wherein said mold cavity has two or more gates that can be controlled of start of injection respectively; said temporary space is a ditch having an eliminator to eliminate the ditch and being set on the surface of the mold cavity where it connects opening portions of the two gates that are mutually adjacent; a second gate which is one of said mutually adjacent two gates is set to be opened after a melt-front of a molten material injected from a first gate being the other of said two gates reaches the position of said second gate; a molten material being progressed in the ditch is pushed and returned to the mold cavity by using the eliminator; said eliminator is started when a melt-front of a molten material from said first gate reaches the position of said second gate.

4. A mold for injection molding according to claim 1 or 2,
wherein said temporary space is a ditch having an eliminator to eliminate the ditch and being set on the surface of the mold cavity where it is in the longitudinal direction from the opening portion of the gate of the mold cavity; a molten material being progressed in the ditch is pushed and returned to the mold cavity by using the eliminator; said eliminator is started when a melt-front of a molten material from said gate reaches the end of the ditch.

5. A mold for injection molding according to claim 1 or 2, wherein said temporary space is the space being situated in the mold cavity space and delimited from the mold cavity space by a virtual boundary and eliminated at a predetermined time by an eliminator; said eliminator is a movable pin having the outside shape fit to the inside shape of the through hole of an target product and is started to be inserted to the mold cavity to occupy the temporary space when the melt front of a molten material passed the position of the temporary space.

6. A mold for injection molding according to claim 5, wherein said movable pin is driven by an oil hydraulic mechanism being controlled by the pressure of the molten resin of the upstream side of the movable pin.

7. A mold for injection molding according to claim 1 or 2, wherein said mold cavity has a body being corresponding to a through hole of a target product and jut into the mold cavity space to cause a branch and a confluence of the molten material; said temporary space is the space being set at the confluence side of the body to act flow leader and eliminated at a predetermined time by an eliminator; said eliminator is started to eliminate the temporary space to push and return a molten material accumulated in the temporary space to the mold cavity.

8. A mold for injection molding according to claim 7, wherein said eliminator is driven by an oil hydraulic mechanism being controlled by the pressure of the molten resin of a predetermined portion in the mold cavity.

9. A method of injection molding by using a mold wherein a mold cavity having an inside shape fit to an outside shape of a target product, and a temporary space being communicated with the mold cavity and is eliminated before an amount of a molten material being injected to the mold cavity reaches the capacity of the mold cavity are included.

10. A method of injection molding by using a mold wherein a mold cavity having an inside shape fit to an outside shape of a target product, a junk cavity being communicated with the mold cavity, and a temporary space being communicated with the mold cavity and is eliminated before an amount of a molten material being injected to the mold cavity reaches the

total capacity of the mold cavity and the junk cavity are included

11. A method of injection molding according claim 9 or 10,

wherein said mold cavity has two or more gates that can be controlled of start of injection respectively, said temporary space is a ditch having an eliminator to eliminate the ditch and being set on the surface of the mold cavity where it connects opening portions of the two gates that are mutually adjacent, said method comprising the steps of:

opening a first gate which is one of said mutually adjacent two gates to inject a molten material into the said mold cavity;

opening a second gate which is the other of said mutually adjacent two gates after the melt-front of the molten material from the first gate reaches the position of the second gate to inject a molten material into the said mold cavity; and

eliminating said ditch when the melt-front of the molten material from the first gate reaches the position of the second gate to push and return the molten material being progressed in the ditch into the mold cavity.

12. A method of injection molding according claim 9 or 10,

wherein said temporary space is a ditch having an eliminator to eliminate the ditch and being set on the surface of the mold cavity where it is in the longitudinal direction from the opening portion of the gate of the mold cavity; a molten material being progressed in the ditch is pushed and returned to the mold cavity by using the eliminator;

starting said eliminator when the melt-front of the molten material from said gate reaches the end of the ditch.

13. A method of injection molding according claim 9,

wherein said temporary space is the space being situated in the mold cavity space and delimited from the mold cavity space by a virtual boundary and eliminated at a predetermined time by an eliminator, said eliminator is a movable pin having the outside shape fit to the inside shape of the through hole of an target product, said method comprising the steps of:

opening a gate to inject a molten material into said mold cavity;

starting the insert of said movable pin to the mold cavity to occupy the temporary space in the period from when the melt front of the molten material has passed a

predetermined portion to when the total amount of the molten material injected to the mold cavity reaches the amount calculated by subtracting the volume of the temporary space from the capacity of the mold cavity.

14. A method of injection molding according claim 13 wherein said movable pin is driven by an oil hydraulic mechanism being controlled by the pressure of the molten resin of the upstream side of the movable pin.

15. A method of injection molding according claim 9 or 10, wherein said mold cavity has a body being corresponding to a through hole of a target product and jut into the mold cavity space to cause a branch and a confluence of the molten material, said temporary space is the space being set at the confluence side of the body to act flow leader and eliminated at a predetermined time by an eliminator, said method comprising the steps of:

opening a gate to inject a molten material into said mold cavity;

starting said eliminator to eliminate the temporary space to push and return a molten material accumulated in the temporary space to the mold cavity.

16. A method of injection molding according claim 15 wherein said eliminator is driven by an oil hydraulic mechanism being controlled by the pressure of the molten resin of the predetermined portion in the mold cavity.

17. A weldless product molded by one of the methods of claims 9 to 16 by using the blending material of 100 parts by mass of polymer, 0.1 to 10 parts by mass of the metallic pigment, and/or 1 to 100 parts by mass of the bulking agent.